

Trend Study 14-10-99

Study site name: Harts Point .

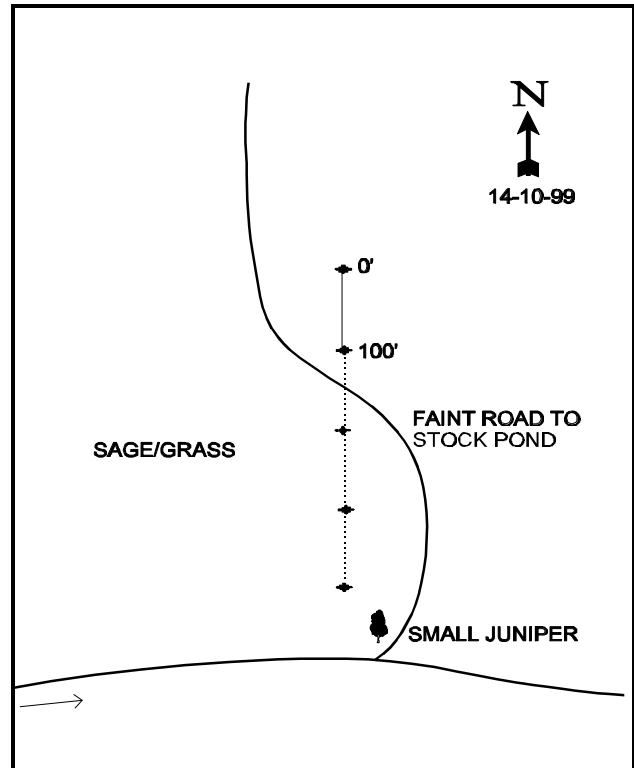
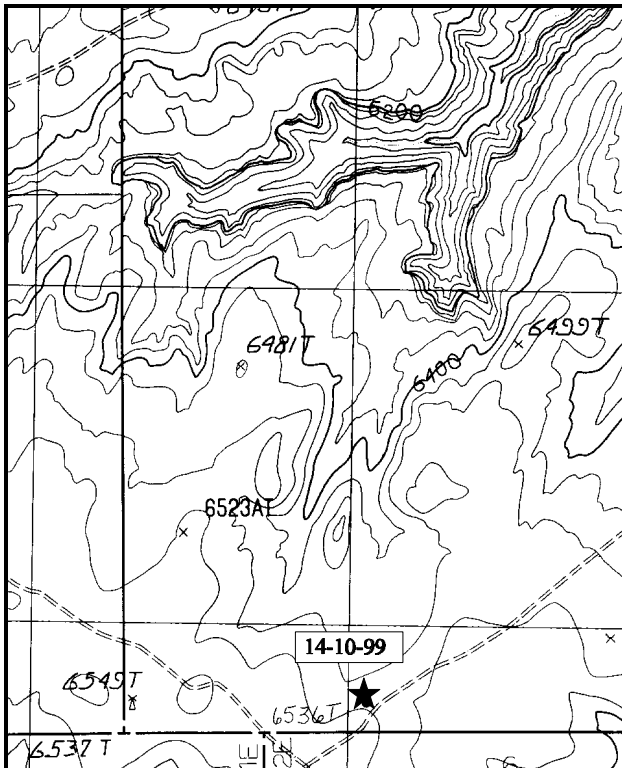
Range type: Big Sagebrush .

Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the turnoff to the Needles District, Canyonlands National Park (onto SR-211 from SR-191), go west and south on the main paved road for 9.75 miles. At this point, just before the road drops down into Indian Creek Canyon, turn right onto the Harts Point Road. Go north on this road 11.1 miles. Turn right onto a small dirt road and go down 0.3 miles to a faint fork. The transect is north and west of these two roads. The last baseline stake is located approximately 30 feet from the fork. The start of the baseline is located 400 feet north and is marked by a fence post with browse tag #7820 attached.



Map Name: Harts Point North

Diagrammatic Sketch

Township 30S , Range 22E , Section 31

UTM 4221002.704 N, 627193.856 E

DISCUSSION

Trend Study No. 14- 10 (35-10)

This transect is out on Hart's Point, in a sagebrush park surrounded by slickrock domes and Juniper-covered hills. It is an arid site with an elevation of 6,400 feet, a moderate slope (1-4%) and a general western aspect. Drainage off Hart's Point mesa is in a northwesterly direction into Harts Draw. A stock pond has been constructed in the area where a small drainage flows between two sandstone bluffs. The pond collects seasonal water and could provide water when cattle (250 head) are present in March and April. Grazing pressure appears to be fairly heavy on this BLM administered land. Pellet group data from 1999 estimate 48 deer days use/acre (119 ddu/ha), 1 elk days use/acre (3 edu/ha), and 22 cow days use/acre (54 cdu/ha). Cattle pats appear to be from last season. Another principal use for this area is oil and gas exploration and extraction. A new pipeline was being constructed across Harts Point in 1986.

Although there are many raised areas of exposed sandstone, the soil appears to be fairly deep with an estimated effective rooting depth of 22 inches. The dry soil is loose with a sandy loam texture and a slightly alkaline pH (7.5). Phosphorus and potassium occur in low amounts at 4.9 ppm and 38.4 ppm respectively. These low levels may limit plant growth and development since 10 ppm of phosphorus and 70 ppm of potassium have been determined to be the minimum for normal plant development. There is no rock on the surface or within the soil profile. The surface was marked by rain and small erosion channels in the past, but current erosion appears minimal. There may be some wind erosion occurring and there is some soil pedestaling around the bunch grasses. Percent bare ground is high at almost 50% in 1994 and 43% in 1999. Cryptogams provided 3% cover in 1994, increasing to 6% by 1999. They generally occur under sagebrush crowns.

Wyoming big sagebrush is the key species on this winter range. The sagebrush appears to have some of the characteristics of both mountain big sagebrush and Wyoming big sagebrush. The population is likely a hybrid between the two subspecies. Use varies greatly between individual plants, indicating some regressive traits with the higher palatability of mountain big sagebrush. The population has remained at a stable density since 1986 at about 3,500 plants/acre, the majority of which are mature. Utilization was heavy in 1986, but more moderate in 1994 and 1999. Percent decadence has remained low, ranging from 23% in 1986 to 11% in 1999. Vigor was normal in 1986, but 57% of the population displayed poor vigor in 1994 (a dry year) and 38% of the decadent plants appeared to be dying. By 1999 vigor of all the mature and most of the decadent plants returned to more normal. Biotic potential (proportion of seedlings to the population) has declined from a high of 21% in 1986, to less than 1% in 1994 and 0% in 1999. Young plants have been sampled with each reading and they are currently appear abundant enough to maintain the population.

Winterfat is scattered throughout the area at relatively low densities (about 200 plants/acre). It appears that these have been heavily hedged in the past which would help explain their low growth form. The few juniper in the area do not appear to show any signs of increasing in the sagebrush flat.

Grasses are diverse and moderately abundant for a Wyoming big sagebrush site. However, only three species are common and two of these are annuals, cheatgrass and sixweeks fescue. These annuals currently provide 55% of the grass cover and cheatgrass has increased significantly in nested frequency since 1994. For the perennial grasses, blue grama is the most abundant, forming a short thick mat over most of the area not occupied by shrubs. It is vigorous, but this warm-season grass does not characteristically provide much spring forage. Blue grama provided 56% of the grass cover in 1994, declining to 34% by 1999. It has declined slightly in nested frequency but not significantly. Occasionally, bunch grasses occur in the protection of the sagebrush crowns.

Forbs are quite sparse on this site with a total cover value of less than one percent in 1994. Forb cover increased to 2% in 1999 due to a significant increase in frequency of lobeleaf groundsel. Other perennial

forbs are represented mostly by low and trailing fleabane, and sego lily. There are also numerous annual species, such as gilia and wooly plantain.

1986 APPARENT TREND ASSESSMENT

Vegetative trend, based on form, vigor, and age class structure of the key browse species Wyoming big sagebrush, is basically stable. There is a fair balance between all parameters. Continued heavy grazing could lead to an increase in cheatgrass on the site, although the blue grama is certainly healthy and vigorous. Continued heavy hedging could be detrimental to the sagebrush population in conjunction with the extended drought. The soil trend is stable to slightly down because of the moderate but normal erosion. An increase in vegetation and especially in litter cover would be positive.

1994 TREND ASSESSMENT

This site is very similar in most aspects to site #9 at Hart's Draw; high amounts of bare ground and a significant loss of litter cover, all leading to a slightly downward trend for soil. The Wyoming big sagebrush has shown some improvements in those plants classified as heavily hedged, from 64% down to only 9%. Percent decadence is up slightly and overall vigor of the sagebrush community has declined with 57% now classified as showing poor vigor. Biotic potential has decreased and the percentage of the population that are young have decreased to 6%. This leads to a trend that is downward in association with the continuing drought. The herbaceous understory trend is stable, with the nested frequency value for perennial grasses staying about the same and the nested frequency value for perennial forbs going down, but all the forbs combined make up less than 1% of the vegetative cover.

TREND ASSESSMENT

soil - slightly downward

browse - slightly downward

herbaceous understory - stable

1999 TREND ASSESSMENT

Trend for soil appears stable with relative percent cover of litter and bare ground remaining similar to 1994 estimates. Erosion is not currently a problem on this site. Trend for the key species, Wyoming big sagebrush is considered improved. Density of sagebrush has remained stable, but percent decadence has declined from 26% in 1994 to 11% in 1999. Vigor has also improved dramatically. In 1994, 57% of the sagebrush sampled showed poor vigor. Currently only 4% of the population was classified with poor vigor. Utilization is mostly light to moderate. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has declined slightly, while frequency of perennial forbs has increased slightly. In addition, cheatgrass has increased significantly in frequency and now provides 33% of the grass cover. Overall herbaceous trend is considered slightly down.

TREND ASSESSMENT

soil - stable

browse - up slightly

herbaceous understory - down slightly

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 10

| Type | Species | Nested Frequency | | | Quadrat Frequency | | | Average Cover % | |
|-----------------------------|------------------------------------|------------------|------------------|------------------|-------------------|-----|-----|-----------------|-------|
| | | '86 | '94 | '99 | '86 | '94 | '99 | '94 | '99 |
| G | <i>Bouteloua gracilis</i> | _b 234 | _a 168 | _a 159 | 74 | 51 | 59 | 8.36 | 4.55 |
| G | <i>Bromus tectorum</i> (a) | - | _a 75 | _b 270 | - | 27 | 95 | 2.93 | 4.39 |
| G | <i>Hilaria jamesii</i> | 31 | 45 | 45 | 16 | 19 | 21 | .70 | .42 |
| G | <i>Oryzopsis hymenoides</i> | _a 7 | _b 27 | _c 64 | 3 | 14 | 28 | .09 | .53 |
| G | <i>Poa secunda</i> | - | - | 1 | - | - | 1 | - | .00 |
| G | <i>Sitanion hystrix</i> | 27 | 30 | 19 | 14 | 13 | 8 | .16 | .11 |
| G | <i>Sporobolus cryptandrus</i> | _a - | _b 47 | _b 20 | - | 19 | 10 | .78 | .15 |
| G | <i>Stipa comata</i> | _b 110 | _b 88 | _a 17 | 51 | 38 | 8 | 1.00 | .23 |
| G | <i>Vulpia octoflora</i> (a) | - | 307 | 299 | - | 96 | 91 | .88 | 3.07 |
| Total for Annual Grasses | | 0 | 382 | 569 | 0 | 123 | 186 | 3.81 | 7.46 |
| Total for Perennial Grasses | | 409 | 405 | 325 | 158 | 154 | 135 | 11.12 | 6.02 |
| Total for Grasses | | 409 | 787 | 894 | 158 | 277 | 321 | 14.93 | 13.48 |
| F | <i>Calochortus nuttallii</i> | _b 6 | _a - | _{ab} 3 | 3 | - | 1 | - | .00 |
| F | <i>Cryptantha</i> spp. | _A - | _b 6 | _a - | - | 4 | - | .02 | - |
| F | <i>Cymopterus</i> spp. | - | 3 | - | - | 1 | - | .15 | - |
| F | <i>Delphinium nuttallianum</i> | - | - | 1 | - | - | 1 | - | .00 |
| F | <i>Draba reptans</i> (a) | - | 7 | 3 | - | 4 | 1 | .02 | .01 |
| F | <i>Erigeron flagellaris</i> | - | 1 | 3 | - | 1 | 1 | .00 | .00 |
| F | <i>Erigeron pumilus</i> | _b 77 | _a 1 | _a 3 | 42 | 1 | 2 | .01 | .18 |
| F | <i>Gilia hutchinsifolia</i> (a) | - | _a 42 | _b 70 | - | 19 | 28 | .09 | .87 |
| F | <i>Lappula occidentalis</i> (a) | - | 1 | 2 | - | 1 | 1 | .00 | .00 |
| F | <i>Machaeranthera canescens</i> | 1 | - | - | 1 | - | - | - | - |
| F | <i>Plantago patagonica</i> (a) | - | 147 | 160 | - | 61 | 69 | .30 | 1.10 |
| F | <i>Ranunculus testiculatus</i> (a) | - | - | 3 | - | - | 1 | - | .03 |
| F | <i>Senecio multilobatus</i> | _a 9 | _b 42 | _c 61 | 5 | 19 | 27 | .16 | 2.25 |
| Total for Annual Forbs | | 0 | 197 | 238 | 0 | 85 | 100 | 0.42 | 2.02 |
| Total for Perennial Forbs | | 93 | 53 | 71 | 51 | 26 | 32 | 0.35 | 2.45 |
| Total for Forbs | | 93 | 250 | 309 | 51 | 111 | 132 | 0.77 | 4.47 |

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --
Herd unit 14 , Study no: 10

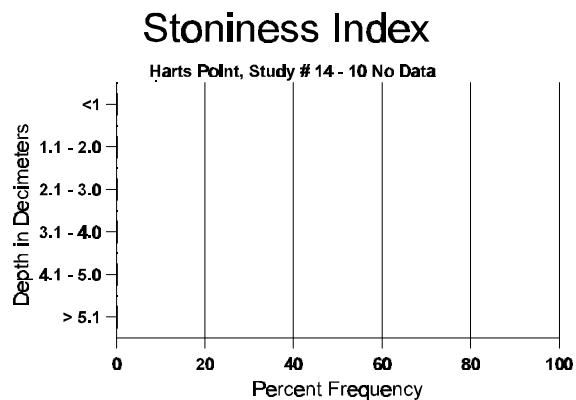
| Type | Species | Strip Frequency | | Average Cover % | |
|------------------|-----------------------------------|-----------------|-----|-----------------|-------|
| | | '04 | '09 | '04 | '09 |
| B | Artemisia nova | 0 | 1 | - | - |
| B | Artemisia tridentata wyomingensis | 79 | 78 | 11.46 | 11.60 |
| B | Ceratoides lanata | 9 | 5 | .04 | .06 |
| B | Gutierrezia sarothrae | 2 | 1 | .00 | - |
| B | Juniperus osteosperma | 0 | 0 | - | - |
| B | Opuntia spp. | 3 | 2 | .06 | - |
| Total for Browse | | 93 | 87 | 11.58 | 11.66 |

BASIC COVER --
Herd unit 14 , Study no: 10

| Cover Type | Nested Frequency | | Average Cover % | | | |
|-------------|------------------|-----|-----------------|-------|-------|-------|
| | '04 | '09 | '86 | '94 | '99 | |
| Vegetation | 35 | 2 | 362 | 10.75 | 27.60 | 27.80 |
| Rock | 1 | - | 0 | .00 | 0 | |
| Pavement | - | 1 | 0 | 0 | .00 | |
| Litter | 374 | 348 | 45.75 | 19.87 | 18.33 | |
| Cryptogams | 154 | 163 | 4.50 | 2.95 | 6.25 | |
| Bare Ground | 353 | 337 | 39.00 | 49.35 | 43.04 | |

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 10, Study Name: Harts Point

| Effective rooting depth (inches) | Temp °F (depth) | pH | %sand | %silt | %clay | %OM | PPM P | PPM K | dS/m |
|----------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
| 22.4 | 64.8 (18.1) | 7.5 | 64.9 | 18.6 | 16.6 | 1.0 | 4.9 | 38.4 | 0.4 |



PELLET GROUP DATA --
Herd unit 14 , Study no: 10

| Type | Quadrat Frequency | | Pellet Transect Days Use/Acre (ha) |
|--------|----------------------|-----|---------------------------------------|
| | '84 | '89 | '89 |
| Rabbit | 36 | 47 | N/A |
| Deer | 30 | 21 | 48 (119) |
| Elk | - | - | 1 (2) |
| Cattle | 6 | 7 | 22 (54) |

BROWSE CHARACTERISTICS --
Herd unit 14 , Study no: 10

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|-----|----|------------------|---|---|-------------------|---|---|----------------|-----|------|------|--------------------|--------------------------------|----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Artemisia nova | | | | | | | | | | | | | | | | | | |
| M | 86 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 94 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 99 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 20 | 6 | 14 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '86 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '94 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '99 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '86 | 0 | Dec: | - | | | |
| | | | | | | | | | | | | '94 | 0 | | - | | | |
| | | | | | | | | | | | | '99 | 20 | | - | | | |
| Artemisia tridentata wyomingensis | | | | | | | | | | | | | | | | | | |
| S | 86 | 15 | - | - | - | - | - | - | - | - | 15 | - | - | - | 1000 | | | 15 |
| | 94 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 20 | | | 1 |
| | 99 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| Y | 86 | 10 | 1 | - | - | - | - | - | - | - | 10 | 1 | - | - | 733 | | | 11 |
| | 94 | 11 | - | - | - | - | - | - | - | - | 5 | 1 | 5 | - | 220 | | | 11 |
| | 99 | 17 | 4 | - | - | - | - | - | - | - | 21 | - | - | - | 420 | | | 21 |
| M | 86 | - | 9 | 23 | - | - | - | - | - | - | 17 | 14 | - | 1 | 2133 | 17 | 22 | 32 |
| | 94 | 96 | 116 | 6 | - | - | - | - | - | - | 141 | 1 | 76 | - | 4420 | 37 | 49 | 221 |
| | 99 | 80 | 41 | 8 | - | 3 | 5 | - | - | - | 137 | - | - | - | 2740 | 25 | 36 | 137 |
| D | 86 | - | - | 13 | - | - | - | - | - | - | 4 | 5 | - | 4 | 866 | | | 13 |
| | 94 | 30 | 7 | 9 | - | - | 1 | - | - | - | 21 | 2 | 6 | 18 | 940 | | | 47 |
| | 99 | 7 | 4 | 5 | 2 | 1 | 1 | - | - | - | 12 | - | - | 8 | 400 | | | 20 |
| X | 86 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 |
| | 94 | - | - | - | - | - | - | - | - | - | - | - | - | - | 400 | | | 20 |
| | 99 | - | - | - | - | - | - | - | - | - | - | - | - | - | 660 | | | 33 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '86 | | 18% | | | 64% | | | 09% | | | +33% | | | | | | | |
| '94 | | 44% | | | 06% | | | 38% | | | -36% | | | | | | | |
| '99 | | 30% | | | 11% | | | 04% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '86 | 3732 | Dec: | 23% | | | |
| | | | | | | | | | | | | '94 | 5580 | | 17% | | | |
| | | | | | | | | | | | | '99 | 3560 | | 11% | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|---|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Ceratoides lanata | | | | | | | | | | | | | | | | | | |
| M | 86 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 | |
| | 94 | 8 | - | - | - | - | - | - | - | - | 8 | - | - | 160 | 7 | 21 | 8 | |
| | 99 | 8 | - | 1 | - | - | - | - | - | - | 9 | - | - | 180 | 6 | 8 | 9 | |
| D | 86 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 94 | 3 | - | - | - | - | - | - | - | - | 1 | 1 | - | 60 | | | 3 | |
| | 99 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '86 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '94 | | 00% | | | 00% | | | 09% | | | -18% | | | | | | | |
| '99 | | 00% | | | 11% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '86 | 0 | Dec: | 0% | | | |
| | | | | | | | | | | | | '94 | 220 | | 27% | | | |
| | | | | | | | | | | | | '99 | 180 | | 0% | | | |
| Gutierrezia sarothrae | | | | | | | | | | | | | | | | | | |
| M | 86 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 | |
| | 94 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | 40 | 8 | 10 | 2 | |
| | 99 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | 20 | 8 | 8 | 1 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '86 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '94 | | 00% | | | 00% | | | 00% | | | -50% | | | | | | | |
| '99 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '86 | 0 | Dec: | - | | | |
| | | | | | | | | | | | | '94 | 40 | | - | | | |
| | | | | | | | | | | | | '99 | 20 | | - | | | |
| Juniperus osteosperma | | | | | | | | | | | | | | | | | | |
| M | 86 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | 66 | 69 | 70 | 1 | |
| | 94 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 | |
| | 99 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '86 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '94 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '99 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '86 | 66 | Dec: | - | | | |
| | | | | | | | | | | | | '94 | 0 | | - | | | |
| | | | | | | | | | | | | '99 | 0 | | - | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|----|------|--------------------|--------------------------------|---|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Opuntia spp. | | | | | | | | | | | | | | | | | | |
| S | 86 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 94 | - | - | - | 1 | - | - | - | - | - | - | 1 | - | - | 20 | | 1 | |
| | 99 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| M | 86 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 94 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | - | 40 | 8 | 2 | |
| | 99 | 3 | - | - | - | - | - | - | - | - | 3 | - | - | - | 60 | 4 | 3 | |
| D | 86 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 94 | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 | 20 | | 1 | |
| | 99 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '86 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '94 | | 00% | | | 00% | | | 33% | | | + 0% | | | | | | | |
| '99 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '86 | 0 | Dec: | 0% | | | |
| | | | | | | | | | | | | '94 | 60 | | 33% | | | |
| | | | | | | | | | | | | '99 | 60 | | 0% | | | |